

## Selections from '038 Patent Prosecution History


**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

08/850,000	APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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MAIL ROOM TELEPHONE: 202-473-2000 FAX: 202-473-2001

MAIL ROOM TELEPHONE: 202-473-2000 FAX: 202-473-2001

EXAMINER
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ART UNIT	PAPER NUMBER
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DATE MAILED:

 This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

**OFFICE ACTION SUMMARY**

- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11,453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

- ☒ Claim(s) 1-27 is/are pending in the application
- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-27 is/are rejected
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement

**Application Papers**

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d)
- ☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been
- ☒ received
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 6
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Form 10/95

U.S. PATENT AND TRADEMARK OFFICE

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#### **Specification**

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.
2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The following guidelines illustrate the preferred layout and content for patent applications. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

The following order or arrangement is preferred in framing the specification and, except for the title of the invention, each of the lettered items should be preceded by the headings indicated below.

- (a) Title of the Invention.
- (b) Cross-References to Related Applications (if any).

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- © Statement as to rights to inventions made under Federally-sponsored research and development (if any).
- (d) Background of the invention.
  - 1. Field of the Invention.
  - 2. Description of the Related Art including information disclosed under 37 CFR 1.97-1.99.
- (e) Summary of the Invention.
- (f) Brief Description of the Drawing.
- (g) Description of the Preferred Embodiment(s).
- (h) Claim(s).
- (I) Abstract of the Disclosure.

***Claim Rejections - 35 USC § 112***

4. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6, 10, 12, 19, 21 and 24 refer to a very specific measurement i.e. 54 mm, 55 mm, 70 mm, 25 mm, 125 mm and 40 degrees, respectively, on the other hand and to "substantially" this measurement on the other. The use of "substantially" renders the specific measure unclear and indefinite.

In claims 9, 10 and 13, the phrase "the junction" is unclear and indefinite. The "junction" of what part of the apparatus to the other? The claims should be defined with proper structural limitations of the elements and their interrelationship with proper nexus.

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In claim 20, the expression "greater than that" is unclear and indefinite. What does "that" refer to, the diameter or the circular portion?

5. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

6. Claims 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2173.05(1). The omitted structural cooperative relationships are: the nexus between a vacuum cleaner and the dust cyclone apparatus of claim 26; and the nexus between a vacuum cleaner and the "further apparatus" of claim 27. Also, what does the "further apparatus" comprise of and how does it connect to a vacuum cleaner? The claims should be defined with proper structural limitations of the elements and their interrelationship with proper nexus.

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***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(a) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-3, 7-9, 14, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyson (5,090,976; Abstract; 11, 11a, 12, 12a and 13 in Fig. 1; col. 4, lines 44-55).

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Dyson discloses an apparatus for separating dirt or dust from an airflow comprising a frustoconical cyclone having a tangential air inlet, the cyclone having the larger diameter and a cone opening located at the end of the cyclone having smaller diameter, and a collector having a base surface facing towards the cone opening wherein the base surface is substantially planar and wherein the distance between the cone opening and the base surface measured parallel to the longitudinal axis of the cyclone. Dyson further discloses the base surface comprising dust-retaining means spaced from the center having an upwardly-extending annular wall, and the end of the wall remote from the junction with the base surface is radiused. Dyson also discloses the separating dirt or dust is incorporated in a vacuum cleaner. Claims 1-3, 7-9, 14, 26 and 27 differ from the disclosure of Dyson in that the claims call for a specific distance between the cone opening and the base surface of either less than 8 mm or between 30 mm and 70 mm. The distance as claimed in claim 1 is implicitly disclosed by Dyson (see col. 4, lines 46-50). In Fig. 1, the distance from the cone opening to the base surface can be derived as being equal to the distance between the ring 32 and the inside wall 11b of the outer cyclone 11. From Fig. 1, Dyson shows the distance for upright cleaners a value between 15 and 30 mm, for tank type cleaners between 20 and 32 mm. Thus, it

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*would be*

~~is~~ implicitly disclosed to a person having ordinary skill in the art that the distance between the cone opening and the base surface can be at the maximum about 30 or 32 mm, depending on the type of vacuum cleaner. Both values fit the alternative range of 30-70 mm as mentioned in claim 1.

**Allowable Subject Matter**

9. Claims 4-6, 10-13 and 15-24 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 4-6 call for specific measurement of the distance between the cone opening and the base surface of the dust collector. This feature is not disclosed in the prior arts.

Claims 10-13 call for specific measurement of the wall thickness and diameter. This feature is not disclosed in the prior arts.

Claims 15-24 call for the specific structure of the dust collector base surface being conical frusto-conical with specific angle of inclination. This feature is not disclosed in the prior arts.

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**Conclusion**

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Soler et al (5,267,371) disclose a cyclone vacuum cleaner.
- b. Dyson (4,853,008) discloses a dual cyclonic cleaning apparatus.
- c. Dyson (5,062,870) discloses a cyclonic vacuum cleaner.
- d. Dyson (5,078,761) discloses a dual inner and outer cyclonic vacuum cleaner.
- e. Dyson (5,145,499) discloses a disposable bin for cyclonic vacuum.
- f. Dyson (5,160,356) discloses a vacuum cleaning apparatus.
- g. Lin (5,123,945) discloses a dust collector.
- h. Lin (5,248,858) discloses a dust catcher assembly.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh-Chau Pham whose telephone number is (703) 308-1605. The examiner can normally be reached on Monday-Thursday from 7:15 a.m. to 5:45 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Jay Woo, can be reached on (703) 308-3793. The fax phone number for this Group is (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0651.

MCP *[Signature]*  
January 15, 1998

*[Signature]*  
JAY H. WOO  
SUPERVISORY PATENT EXAMINER  
JAN 15 1998  
K11-58

MAPP 083



Notetry 4.1-29  
4/08/98 *at* - *1.4.*

*8/a*  
*7-17-98*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: James Dyson, Andrew Walter McRae Thomson  
and Simon Mark Bickerstaff

Serial No.: 08/850,000 Group Art Unit 1305

Filed : August 11, 1997

For : IMPROVED DUST SEPARATION APPARATUS

Examiner : M. Pham

Commissioner of Patents and Trademarks  
Washington, D. C. 20231

AMENDMENT UNDER 37 CFR 1.111

Sir:

In response to the Office Action mailed January  
21, 1998, the Applicants amend and remark as follows:

In the Specification

Page 1, delete the Abstract at the front of the  
application, and insert the "Abstract of the Disclosure"  
at the end of the application after page 16, as follows:

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ABSTRACT OF THE DISCLOSURE

An apparatus (10) for separating dirt or dust  
 from an airflow comprising a frustoconical cyclone (12)  
 having a tangential air inlet (16) located at or adjacent  
 5 the end of the cyclone (12) having the larger diameter  
 and a cone opening (18) located at the end of the cyclone  
 (12) having the smaller diameter is described. A  
 collector (20) is arranged so as to surround the cone  
 opening (18) and has a base surface (24) facing towards  
 10 the cone opening (18). The distance between the cone  
 opening (18) and the base surface (24) is between 4 and  
 6 mm or between 45 and 60 mm. The apparatus (10) is  
 reduced in size without substantially affecting the  
 separation efficiency.

Page 1, after the Title, insert the following  
 headings: --BACKGROUND OF THE INVENTION--; and --(1)  
 Field of the Invention--.

Page 1, after line 5, insert the following  
 heading --(2) Description of Related Art--.

Page 2, after line 19, insert the following  
 heading --OBJECTS--.

Page 2, after line 23, insert the following  
 heading --SUMMARY OF THE INVENTION--.

Page 2, line 25, delete "as claimed in Claim 1"  
 and insert the following:

1 for separating dirt or dust from an airflow  
2 comprising a frustoconical cyclone having a tangential  
3 air inlet located at or adjacent the end of the cyclone  
4 having the larger diameter and a cone opening located at  
5 the end of the cyclone having a smaller diameter than at  
6 the end having the larger diameter, and a collector  
7 arranged so as to surround the cone opening and having a  
8 base surface facing towards the cone opening and upwardly  
9 ending wall, wherein the distance between the cone  
10 opening and the base surface is either between 4 and 6 mm  
11 or between 45 and 60 mm.

Page 4, before line 1, insert the following  
heading --BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 4, after line 22, insert the following  
heading --DESCRIPTION OF PREFERRED EMBODIMENTS--.

In the Claims

Cancel Claims 25, 26 and 27.

1 1. (Amended) Vacuum cleaner apparatus  
 2 [Apparatus] for separating dirt or dust from an airflow  
 3 comprising a frustoconical cyclone having a tangential  
 4 air inlet located at or adjacent the end of the cyclone  
 5 having the larger diameter and a cone opening located at  
 6 the end of the cyclone having a [the] smaller diameter  
 7 than at the end having the larger diameter, and a  
 8 collector arranged so as to surround the cone opening and  
 9 having a base surface facing towards the cone opening,  
 10 wherein the distance between the cone opening and the  
 11 base surface is either less than 8mm or between 30mm and  
 12 <sup>70 mm</sup> 70mm such that there is improved separation of the dirt or  
 13 dust because of the distance in the apparatus

1 3. (Amended) Apparatus as claimed in claim 2,  
 2 wherein the distance between the cone opening and the  
 3 base surface is measured parallel to a [the] longitudinal  
 4 axis between the ends of the cyclone.

1 6. (Amended) Apparatus as claimed in claim 5,  
 2 wherein the distance between the cone opening and the  
 3 base surface is [substantially] 54 mm.

11

1                   7. (Amended) Apparatus as claimed in any one  
2 of Claims 3, 4, 5 or 6 [the preceding claims], wherein  
3 the base surface [comprises dust-retaining means] has a  
4 diameter which is spaced around a longitudinal axis of  
5 the cyclone [from the centre thereof].

95  
cont

1                   8. (Amended) Apparatus as claimed in claim 7,  
2 wherein the [dust-retaining means comprise] an upwardly-  
3 extending [annular] wall is annular.

1                   9. (Amended) Apparatus as claimed in claim 8,  
2 wherein [the] an upwardly extending wall extends upwardly  
3 from [the junction thereof with] the base surface for  
4 between 10 mm and 60 mm.

1                   10. (Amended) Apparatus as claimed in claim  
2 9, wherein the wall extends upwardly from [the junction  
3 thereof with] the base surface for [substantially] 55 mm.

1 11. (Amended) Apparatus as claimed in any one  
2 of claims 3, 4, 5 or 6 [8 to 10], wherein the base  
3 surface has a diameter spaced around the longitudinal  
4 axis of the cyclone and wherein the diameter of the wall  
5 is between 30mm and 100mm.

As  
cont.

1 12. (Amended) Apparatus as claimed in claim  
2 11, wherein the diameter of the wall is [substantially]  
3 70 mm.

1 13. (Amended) Apparatus as claimed in any one  
2 of claims 3, 4, 5 or 6 [8 to 12], wherein the base  
3 surface has a diameter spaced around the longitudinal  
4 axis of the cyclone with an upwardly extending annular  
5 wall from the base surface wherein a diameter [the  
6 thickness] of the wall is greater at an [the] end  
7 adjacent the [junction with the ] base surface than at an  
8 [the] end remote therefrom.

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27



1 14. (Amended) Apparatus as claimed in any one  
2 of claims 3, 4, 5 or 6 [8 to 13], wherein the base  
3 surface is spaced around the longitudinal axis of the  
4 cyclone with an upwardly extending annular wall from the  
5 base surface wherein the end of the wall remote from the  
6 [junction with the ] base surface is radiused.

As  
cont.

1 15. (Amended) Apparatus as claimed in any one  
2 of Claims 3, 4, 5 or 6 [the preceding claims], wherein  
3 the base surface has a diameter spaced around the  
4 longitudinal axis of the cyclone with an upwardly  
5 extending annular wall from the base surface wherein at  
6 least a portion of the annular wall [base surface] is  
7 conical or frustoconical in shape.

1 16. (Amended) Apparatus as claimed in claim  
2 15, wherein the collector [base surface] comprises a  
3 frustoconical portion as the wall and a circular portion  
4 as the base portion.

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1 17. (Amended) Apparatus as claimed in claim  
2 16, wherein the diameter of the circular portion is  
3 [substantially] the same as that of the cone opening.

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1 19. (Amended) Apparatus as claimed in claim  
2 16, wherein the diameter of the circular portion is  
3 [substantially] 25 mm.

1 20. (Amended) Apparatus as claimed in claim  
2 16, wherein the diameter of the circular portion is  
3 [substantially] greater than a diameter [that] of the  
4 cone opening.

1 21. (Amended) Apparatus as claimed in claim  
2 20, wherein the diameter of the circular portion is  
3 [substantially] 125 mm.

1 22. (Amended) Apparatus as claimed in Claim  
2 16 [any one of claims 16 to 21], wherein the circular  
3 portion is planar.

1 23. (Amended) Apparatus as claimed in Claim  
2 15 [any one of claims 15 to 22], wherein the conical or  
3 frusto-conical portion of the collector [base surface] is  
4 inclined at an angle of between 30° and 50° to the  
5 longitudinal axis of the cyclone.

Ag  
cont.

1 24. (Amended) Apparatus as claimed in claim  
2 23, wherein the conical or frusto-conical portion of the  
3 base surface is inclined at an angle of [substantially]  
4 40° to the longitudinal axis of the cyclone.

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REMARKS

Claims 1 to 24 are pending. Claims 25 to 27 have been cancelled. Claims 4 to 6, 10 to 13 and 15 to 24 were indicated to be allowable in the last Office Action.

In reference to the Office Action,

(1) an Abstract has been provided as required, including a new page 17;

(2) the necessary amendments have been made to the specification;

(3) Claims 1 to 27 were rejected as indefinite under 5 USC 112, second paragraph. In Claims 6, 10, 12, 19, 21 and 24, the word "substantially" has been eliminated. In Claims 9, 10 and 13 the word "junction" has been deleted as unnecessary. Claim 20 has been corrected. Claims 25, 26 and 27 have been deleted as unnecessary.

(4) Claims 1 to 3, 7 to 9, 14, 26 and 27 were rejected under 35 USC 103(a) as being unpatentable over Dyson (U.S. Patent No. 5,090,976). Claim 1 includes the ranges as set forth in Figure 2 which provide the improved separation. The rejection indicates that the distance between the cone opening and the base of the collector (let's call it the cone-base gap) as shown in Figure 1 of U.S. Patent No. 5,090,976 (Dyson patent) is the same as the distance between the tubular ring 32 and the inside wall 11b of the bin (let's call this the shroud gap). Because the specification says that this shroud gap can be up to 30 or 32 mm, the Examiner is saying that the cone-base gap can be varied up to this size as well. This is not correct. The Examiner is assuming that, in order to vary the size of the shroud gap, one would automatically scale up or scale down the entire machine. This is not practical at all. To do so would not alter or improve the characteristics of the vacuum cleaner; it would just get bigger without getting better. There is just no reason why one skilled in the art would want to do it. One may as well leave the shroud gap as it is because one would not get any benefit from changing it.

If, in spite of this, one skilled in the art still wanted to scale up the vacuum cleaner shown in the Dyson patent, the diameter of the machine would have to be about 450 mm in order for the cone-base gap to be as much as 30 or 32 mm. This is an unreasonable size for a

vacuum cleaner. The height would be about 83 cm. Since the machine shown in the Dyson patent is essentially a cylinder machine, it is not practical to have such an enormous machine and it would be extremely heavy. One skilled in the art would not be inclined to make a vacuum cleaner of such a size.

If one skilled in the art wanted to increase the size of the shroud gap, he would definitely not assume that he had to scale up the whole machine; he would merely manufacture the shroud 31 with a smaller diameter. Similarly, in order to decrease the shroud gap, he would merely manufacture the shroud 31 with a bigger diameter. The relative proportions of the machine need to be changed in some way in order to create a change in the operation of the machine. Otherwise, there would be no benefit in making the change.

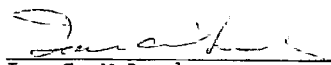
In this event, the size of the shroud gap would be different from the size of the cone-base gap. There is nothing whatsoever in the disclosure of the Dyson patent which states or even implies that the size of the cone-base gap must be kept the same as the shroud gap. Therefore, one skilled in the art could quite freely make any necessary changes to the shroud gap without perceiving any need quite rightly, that there is any consequential need to alter the cone-base gap.

The only way to determine the cone-base gap illustrated in the Dyson patent is to measure the gap and scale up in accordance with a dimension which is actually

given in the description. The only dimension which is given accurately is the diameter of the outer cyclone 11 at 27 cm. These measurements make the cone-base gap to be a fraction over 2 cm on this basis. This is the only basis for disclosure of the cone-base gap given in the Dyson patent. It is thus believed that Claim 1 is allowable over Dyson, as are all of the claims dependent thereon. Reconsideration of this rejection is requested.

It is believed that Claims 1 to 24 are in condition for allowance. Notice of Allowance is requested.

Respectfully,

  
Ian C. McLeod  
Registration No. 20,931

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Enclosure: Page 17 (Abstract of the Disclosure)